Trend Study 19B-18-02

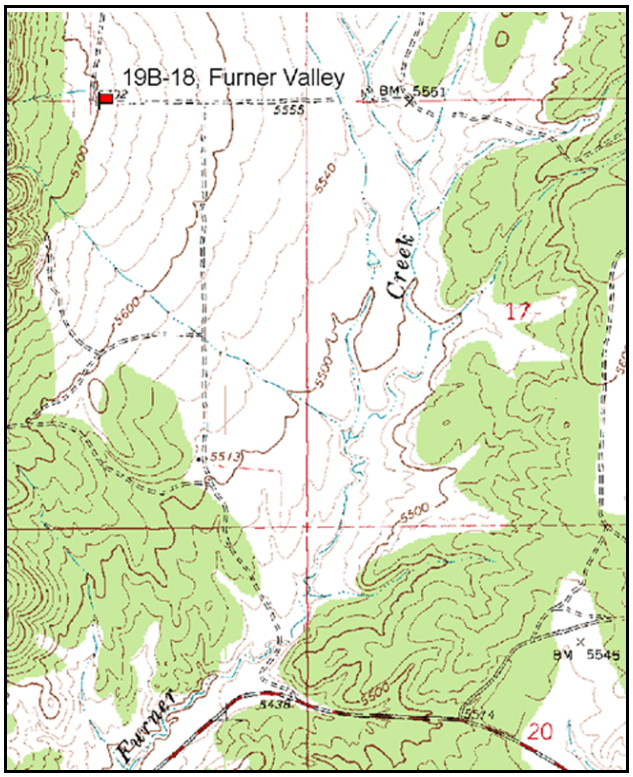
Study site name: Furner Valley . Vegetation type: Big Sagebrush-Grass .

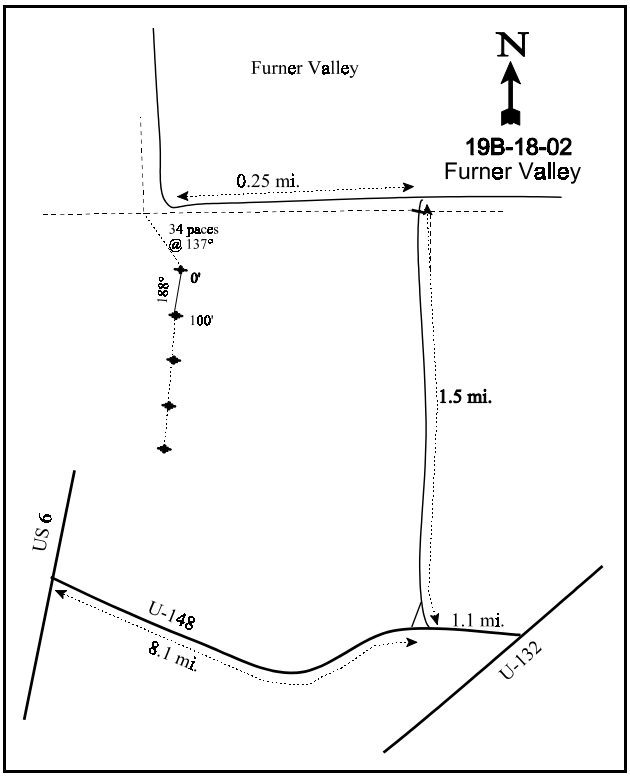
Compass bearing: frequency baseline 188 degrees magnetic.

Frequency belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft). Rebar: belt 1 on 1ft and belt 4 on 1ft.

LOCATION DESCRIPTION

From a point on Highway U-148, located 8.1 miles east of the junction of Highway U-148 and U.S. 6, proceed north on the dirt road to Furner Valley for 1.50 miles. At this point, there is a "T" intersection with cropland immediately to the north. Turn left (west) for 0.25 miles, to where the road turns north again at a right angle. Stop! From the corner of the fence, walk 34 paces at an azimuth of 137 degrees M to the 0-foot marker of the frequency baseline, a green steel fencepost 15 inches high with a red browse tag, number 3936, attached.





Map Name: Furner Ridge

Diagrammatic Sketch

Township 13S , Range 2W , Section 18

GPS: NAD 27, UTM 12S 4393400 N 406634 E

DISCUSSION

Furner Valley - Trend Study No. 19B-18

The Furner Valley trend study samples deer winter range on the west side of Furner Valley. The study area has a gentle slope to the east at an elevation of 5,700 feet. The range type is mountain big sagebrush-grass with antelope bitterbrush as a sub-dominant shrub. Immediately west of the study site is a mature stand of juniper-pinyon which provides escape and thermal cover. Deer use has been moderate to heavy in the past, and there is evidence of cattle and sheep use as well. It was observed in 1989 under dry conditions, that cattle had already (July 20th) made considerable use of the bitterbrush's current years growth. The area is in close proximity to a large dryland farm which may attract deer in the spring. A pellet group transect read on site in 2002 estimated 36 deer days use/acre (89 ddu/ha). Remnants of old cattle, horse, and sheep droppings were also sampled in 2002.

The soil is light in color with rock and pavement scattered across the soil surface and throughout the profile. Soil textural and chemical analysis indicates a sandy clay loam with a neutral pH (7.1). The effective rooting depth is almost 11 inches with a temperature of 67°F measured at about 14 inches. A moderate amount of bare soil is exposed, but erosion is light because of the nearly level terrain. Vegetation and litter are abundant and adequately protect the surface. The erosion condition class was determined as stable in 2002.

Mountain big sagebrush and antelope bitterbrush comprise the key browse species. Together they account for nearly 80% of the browse cover, or 40% of the total vegetation cover on the site. The mountain big sagebrush population numbered about 2,000 plants/acre with a moderately abundant young age class in 1997 and 2002. Vigor was poor and decadence high in 1983 and 1989, but both have improved greatly. Utilization was moderate to heavy during the initial reading in 1983, but has been mostly light since. The proportion of the decadent age class classified as dying was high in 1997. It was reported that the density may decline in the future. The population density did slightly decline in 2002 with an increase in the number of dead plants, but due to an increasing number of young plants in 2002, the density appears to be stabilizing. Annual leader growth on sagebrush averaged 2.6 inches in 2002. Antelope bitterbrush numbers over 500 plants/acre on the site. This population is highly mature with low recruitment in all years. Even with moderate to heavy use, bitterbrush vigor has been normal in all years and decadence low. Annual leader growth averaged 1.4 inches in 2002, although this measurement was determined in May so additional growth was likely.

Broom snakeweed increased in density in 1997 to 5,000 plants/acre, declining somewhat in 2002. This is a mostly mature population, but may have the ability to increase with suitable climatic conditions. Broom snakeweed density can fluctuate dramatically depending upon the amount and timing of precipitation. Stickyleaf low rabbitbrush and pricklypear cactus were encountered on the site but in very low abundance. Point-center quarter data estimates juniper density at 35 trees/acre.

Perennial grasses are common in the understory and provide about one-third of the total vegetative cover on the site. Needle-and-thread grass is the most abundant species with bottlebrush squirreltail, Sandberg bluegrass, bluebunch wheatgrass, and Indian ricegrass being present but in much lower densities. With drought in 2002, the sum of nested frequency value for perennial grasses remained nearly stable. Individual species changes include a significant decline in squirreltail, but slight increases in needle-and-thread, Sandberg bluegrass, bluebunch wheatgrass, and Indian ricegrass. Cheatgrass slightly increased on the site as well. Slight increases in both the nested and quadrat frequencies of cheatgrass occurred in 2002 even with drought. In 1997, cheatgrass was dense in localized patches.

The diversity and composition of the forb component is moderate, but plants are very scattered in their distribution. Perennial forbs declined in sum of nested frequency in 2002 with drought. The most abundant perennials include Torrey milkvetch, longleaf phlox, and Lewis flax. Pale alyssum, an annual, has the highest nested frequency of any single species. It provided 87% of the forb cover in 2002.

1983 APPARENT TREND ASSESSMENT

Soil trend appears stable due to the gentle terrain. Perennial cover is lacking and soils are potentially erodible. Litter cover comes primarily from dead cheatgrass. The browse trend appears downward because of poor condition within the mountain big sagebrush stand. In addition, other shrubs and grasses do not appear to be filling the gaps left by dead sagebrush. The site is capable of supporting a much better bitterbrush population.

1989 TREND ASSESSMENT

The soil trend is slightly improved, but still poor. Percent bare ground cover is still high, although it is lower than estimated in 1983. Percent pavement cover has increased greatly indicating erosion has occurred. The browse trend is slightly downward. Both mountain big sagebrush and antelope bitterbrush show increased decadence since 1983 due most likely to the current drought. The decadence rate in sagebrush is currently extremely high at 75%. Over half of the sagebrush population displays poor vigor as well. The herbaceous understory trend is slightly upward with an increase in the sum of nested frequency of perennial grasses and forbs.

TREND ASSESSMENT
soil - slightly up (4)
browse - down (2)
herbaceous understory - slightly up (4)

1997 TREND ASSESSMENT

The soil trend is stable with only slight erosion apparent. Percent bare ground is similar to that of 1989 and cover of pavement has declined. The browse trend is slightly downward. Decadence and poor vigor in the mountain big sagebrush population have improved; however, the proportion of decadent plants that are classified as dying is increasing. It is likely that a further die-off (about 15%) of sagebrush may occur in the future. Antelope bitterbrush percent decadency has improved. The herbaceous understory trend is stable. The perennial herbaceous understory sum of nested frequency is only slightly lower than that reported in 1989.

TREND ASSESSMENT
soil - stable (3)
browse - slightly down (2)
herbaceous understory - stable (3)

2002 TREND ASSESSMENT

The soil trend is stable. Bare ground continues to decline, and important protective cover provided by the perennial grass component slightly increased. Litter cover declined in 2002, but the erosion condition class was stable. Trend for browse is stable. As was reported in 1997, the density of mountain big sagebrush did slightly decline. However, young plants are abundant (24% of the population) in 2002, and the proportion of the decadent age class classified as dying is declining. It appears that the population is stabilizing. Decadence remained at about the same level as reported in 1997, and vigor improved. Bitterbrush remains at a stable density, decadence is low, vigor good, and use mostly moderate. Trend for the herbaceous understory is slightly down in 2002 with a decline in sum of nested frequency for perennial species, primarily forbs.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - slightly down (2)

HERBACEOUS TRENDS --
Herd unit 19B, Study no: 18

Type	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'83	'89	'97	'02	'83	'89	'97	'02	'97	'02
G	Agropyron cristatum	-	-	2	1	-	-	2	1	.15	.03
G	Agropyron smithii	-	-	-	8	-	-	-	3	-	.04
G	Agropyron spicatum	$_{ab}$10	$_{ab}$12	$_{a}$4	$_{b}$19	4	5	2	7	.06	1.00
G	Bromus japonicus (a)	-	-	-	4	-	-	-	2	-	.01
G	Bromus tectorum (a)	-	-	219	241	-	-	69	81	5.28	2.36
G	Oryzopsis hymenoides	$_{ab}$40	$_{b}$58	$_{a}$20	$_{ab}$38	20	27	10	18	.82	1.77
G	Poa fendleriana	-	2	-	-	-	1	-	-	-	-
G	Poa pratensis	3	4	-	-	1	2	-	-	-	-
G	Poa secunda	$_{a}$7	$_{a}$6	$_{b}$37	$_{a}$41	3	3	17	17	.47	1.11
G	Sitanion hystrix	$_{c}$107	$_{b}$70	$_{bc}$82	$_{a}$25	48	31	38	13	1.28	.49
G	Sporobolus cryptandrus	-	-	4	2	-	-	1	1	.15	.00
G	Stipa comata	$_{a}$111	$_{b}$178	$_{ab}$172	$_{b}$180	47	71	69	70	5.96	9.34
G	Unknown grass - perennial	-	-	3	-	-	-	1	-	.15	-
Total for Annual Grasses		0	0	219	245	0	0	69	83	5.28	2.37
Total for Perennial Grasses		278	330	324	314	123	140	140	130	9.06	13.80
Total for Grasses		278	330	543	559	123	140	209	213	14.34	16.18
F	Alyssum alyssoides (a)	-	-	$_{a}$305	$_{b}$333	-	-	93	95	2.28	5.83
F	Antennaria rosea	-	-	2	-	-	-	1	-	.00	-
F	Arabis spp.	5	-	-	-	3	-	-	-	-	-
F	Astragalus calycosus	$_{a}$5	$_{ab}$13	$_{c}$30	$_{bc}$23	3	8	17	11	.40	.30
F	Astragalus spp.	-	-	7	4	-	-	3	2	.09	.03
F	Caulanthus crassicaulis	$_{b}$34	$_{b}$20	$_{a}$-	$_{a}$-	15	10	-	-	-	-
F	Carduus nutans (a)	-	-	2	-	-	-	1	-	.00	-
F	Calochortus nuttallii	6	-	3	3	3	-	2	1	.04	.00
F	Castilleja spp.	$_{a}$-	$_{a}$-	$_{b}$9	$_{a}$1	-	-	4	1	.17	.03
F	Chaenactis douglasii	2	4	10	-	1	3	4	-	.04	-
F	Crepis acuminata	-	-	2	-	-	-	1	-	.03	-
F	Ipomopsis aggregata	2	-	-	-	2	-	-	-	-	-
F	Lithospermum incisum	11	8	1	2	6	5	1	1	.01	.00
F	Linum lewisii	$_{b}$33	$_{b}$52	$_{b}$31	$_{a}$3	19	25	15	2	.16	.04
F	Lygodesmia grandiflora	5	8	-	8	3	4	-	3	-	.04
F	Machaeranthera canescens	-	1	-	-	-	1	-	-	-	-
F	Oenothera spp.	1	5	6	3	1	2	2	1	.01	.03
F	Phlox austromontana	$_{a}$3	$_{b}$19	$_{a}$6	$_{a}$6	2	9	3	3	.19	.18
F	Phlox longifolia	$_{a}$10	$_{b}$36	$_{ab}$36	$_{ab}$25	4	18	16	12	.13	.10
F	Senecio multilobatus	$_{a}$4	$_{a}$16	$_{b}$44	$_{a}$1	3	9	22	1	.39	.00
F	Sphaeralcea coccinea	-	-	-	3	-	-	-	1	-	.00

Type	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'83	'89	'97	'02	'83	'89	'97	'02	'97	'02
F	Streptanthus cordatus	$_{a}$-	$_{b}$13	$_{b}$14	$_{ab}$1	-	6	7	1	.11	.00
F	Tragopogon dubius	17	7	7	6	9	3	4	4	.09	.05
F	Unknown forb-perennial	-	3	-	-	-	1	-	-	-	-
F	Zigadenus paniculatus	$_{a}$-	$_{b}$21	$_{a}$3	$_{a}$2	-	13	1	2	.00	.01
Total for Annual Forbs		0	0	307	333	0	0	94	95	2.29	5.83
Total for Perennial Forbs		138	226	211	91	74	117	103	46	1.89	0.85
Total for Forbs		138	226	518	424	74	117	197	141	4.18	6.69

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS --
Herd unit 19B, Study no: 18

Type	Species	Strip Frequency		Average Cover %	
		'97	'02	'97	'02
B	Artemisia tridentata vaseyana	66	60	11.05	9.38
B	Chrysothamnus viscidiflorus viscidiflorus	1	2	-	-
B	Gutierrezia sarothrae	59	55	1.29	.96
B	Juniperus osteosperma	4	5	2.74	4.59
B	Leptodactylon pungens	0	1	-	.00
B	Opuntia spp.	1	1	.00	.03
B	Purshia tridentata	25	23	4.83	8.89
Total for Browse		156	147	19.93	23.88

CANOPY COVER --
Herd unit 19B, Study no: 18

Species	Percent Cover	
	'97	'02
Juniperus osteosperma	-	2

Key Browse Annual Leader Growth
Herd unit 19B , Study no: 18

Species	Average leader growth (in)
	'02
Artemisia tridentata vaseyana	2.6
Purshia tridentata	1.4

Point-Quarter Tree Data
Herd unit 19B , Study no: 18

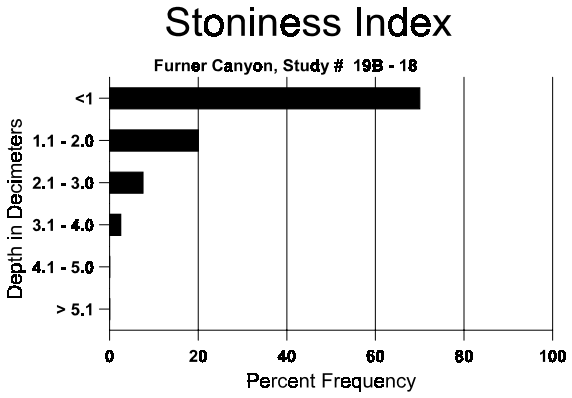
Species	Trees per Acre		Average diameter (in)	
	'97	'02	'97	'02
Juniperus osteosperma	29	35	4.3	3.4

BASIC COVER --
Herd unit 19B, Study no: 18

Cover Type	Nested Frequency		Average Cover %			
	'97	'02	'83	'89	'97	'02
Vegetation	354	373	2.00	7.25	34.52	46.75
Rock	121	129	1.75	1.50	1.52	2.01
Pavement	267	259	1.00	20.50	8.73	7.61
Litter	379	380	52.25	41.25	40.31	36.43
Cryptogams	79	186	0	3.75	1.25	11.40
Bare Ground	266	249	43.00	25.75	22.77	20.70

SOIL ANALYSIS DATA --
Herd Unit 19B, Study no: 18, Furner Valley

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
10.7	66.8 (13.8)	7.1	54.4	23.1	22.6	2.4	10.5	160.0	0.6



PELLET GROUP FREQUENCY --
Herd unit 19B, Study no: 18

Type	Quadrat Frequency		Pellet Transect	
	'97	'02	Pellet Groups per Acre ⁄02	Days Use per Acre (ha) ⁄02
Sheep	2	2	52	4 (10)
Rabbit	12	21	-	-
Horse	-	2	78	N/A
Elk	1	-	-	-
Deer	11	12	470	36 (89)
Cattle	2	2	70	6 (14)

BROWSE CHARACTERISTICS --
Herd unit 19B, Study no: 18

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata vaseyana																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	10	-	-	-	-	-	-	-	-	10	-	-	-	333			10
	97	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
	02	6	-	-	-	-	-	-	-	-	6	-	-	-	120			6
Y	83	3	-	-	-	-	-	-	-	-	3	-	-	-	100			3
	89	2	-	-	1	-	-	-	-	-	3	-	-	-	100			3
	97	17	-	-	-	-	-	-	-	-	17	-	-	-	340			17
	02	23	-	1	-	-	-	-	-	-	24	-	-	-	480			24
M	83	2	20	19	-	-	-	-	-	-	41	-	-	-	1366	24	31	41
	89	12	4	-	-	-	-	-	-	-	10	3	3	-	533	24	28	16
	97	44	5	-	10	-	-	1	-	-	52	-	7	1	1200	33	48	60
	02	37	8	3	2	-	-	-	-	-	48	-	2	-	1000	31	43	50
D	83	-	12	28	-	-	-	-	-	-	35	-	5	-	1333			40
	89	46	12	-	-	-	-	-	-	-	10	11	28	9	1933			58
	97	20	5	-	3	-	-	-	-	-	11	-	1	16	560			28
	02	17	5	-	2	1	-	-	-	-	17	-	-	8	500			25
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	380			19
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	780			39

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	38%	56%	06%	- 8%
'89	21%	00%	52%	-18%
'97	10%	00%	24%	- 6%
'02	14%	04%	10%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	2799	Dec:	48%
	'89	2566		75%
	'97	2100		27%
	'02	1980		25%

Chrysothamnus viscidiflorus viscidiflorus

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20	16	26	1
	02	2	-	-	-	-	-	-	-	-	2	-	-	-	40	7	14	2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	
'89	00%	00%	00%	
'97	00%	00%	00%	+50%
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	0	Dec:	-
	'89	0		-
	'97	20		-
	'02	40		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Gutierrezia sarothrae																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	2	-	-	-	-	-	-	-	-	2	-	-	-	66			2
	97	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	3	-	-	2	-	-	-	-	-	5	-	-	-	166			5
	97	54	-	-	7	-	-	-	-	-	61	-	-	-	1220			61
	02	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
M	83	15	2	2	-	-	-	-	-	-	10	-	9	-	633	7	6	19
	89	37	-	-	1	-	-	-	-	-	38	-	-	-	1266	9	8	38
	97	183	-	-	6	-	-	-	-	-	189	-	-	-	3780	10	10	189
	02	152	-	-	8	-	-	-	-	-	160	-	-	-	3200	7	10	160
D	83	2	-	-	-	-	-	-	-	-	-	-	2	-	66			2
	89	4	-	-	-	-	-	-	-	-	3	-	1	-	133			4
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	26	-	-	-	-	-	-	-	-	9	-	-	17	520			26
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	1420			71

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	10%	10%	52%	+55%
'89	00%	00%	02%	+69%
'97	00%	00%	00%	-24%
'02	00%	00%	09%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	699	Dec:	9%
	'89	1565		8%
	'97	5000		0%
	'02	3820		14%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Juniperus osteosperma																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
Y	83	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	89	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	2	-	-	1	-	-	-	-	-	3	-	-	-	60	-	-	3
	02	4	-	-	-	-	-	-	1	-	5	-	-	-	100	-	-	5

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	+ 0%
'89	00%	00%	00%	+59%
'97	00%	00%	00%	+20%
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	33	Dec:	-
	'89	33		-
	'97	80		-
	'02	100		-

Leptodactylon pungens																		
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20	9	16	1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	
'89	00%	00%	00%	
'97	00%	00%	00%	
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	0	Dec:	-
	'89	0		-
	'97	0		-
	'02	20		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Opuntia spp.																		
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20	3	3	1
	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20	5	7	1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	
'89	00%	00%	00%	
'97	00%	00%	00%	+ 0%
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	0	Dec:	-
	'89	0		-
	'97	20		-
	'02	20		-

Purshia tridentata																		
Y	83	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	89	-	1	-	-	-	-	-	-	-	1	-	-	-	33			1
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	83	5	6	-	-	-	-	-	-	-	11	-	-	-	366	29	42	11
	89	-	4	1	-	-	-	-	-	-	5	-	-	-	166	23	37	5
	97	6	11	5	-	3	-	-	-	-	25	-	-	-	500	34	58	25
	02	5	11	4	-	2	-	2	-	-	24	-	-	-	480	46	81	24
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	1	1	1	-	-	-	-	-	-	3	-	-	-	100			3
	97	-	2	-	-	1	-	-	-	-	2	-	-	1	60			3
	02	-	2	-	-	-	-	-	-	-	1	-	-	1	40			2
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	80			4

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	50%	00%	00%	-25%
'89	67%	22%	00%	+48%
'97	59%	17%	03%	-10%
'02	58%	15%	04%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	399	Dec:	0%
	'89	299		33%
	'97	580		10%
	'02	520		8%